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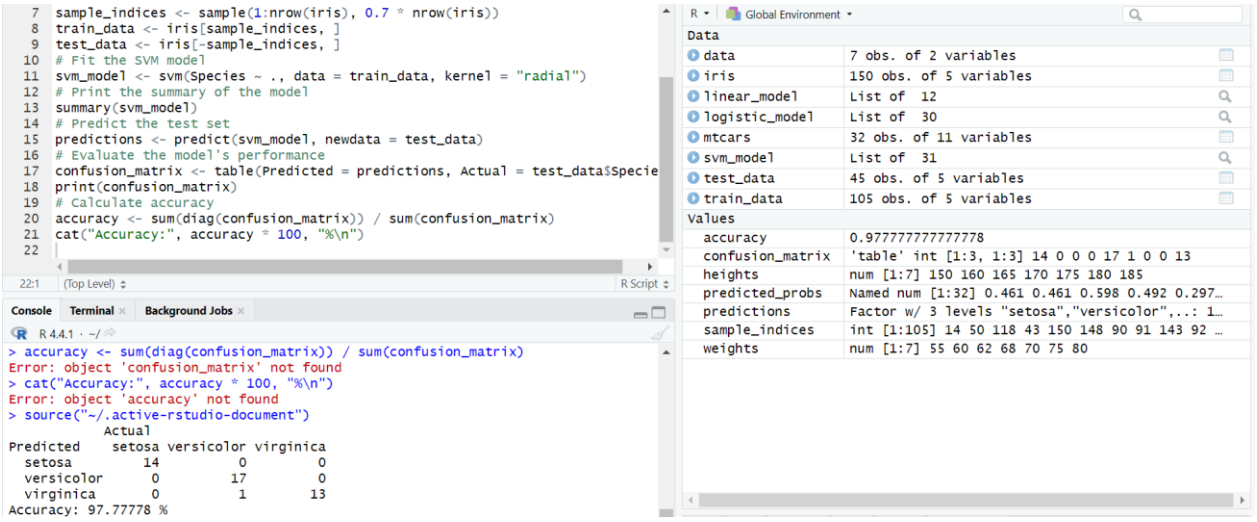
Exp8:

Implement SVM/Decision tree classification techniques

Aim: To implement SVM/Decision Tree classification techniques in RStudio using R language.

a) SVM IN R

```
# Install and load the e1071 package (if not already installed)
install.packages("e1071") library(e1071)

# Load the iris dataset data(iris)

# Inspect the first few rows of the dataset head(iris)

# Split the data into training (70%) and testing (30%) sets set.seed(123)
# For reproducibility
sample_indices <- sample(1:nrow(iris), 0.7 * nrow(iris)) train_data
<- iris[sample_indices, ]
test_data <- iris[-sample_indices, ]

# Fit the SVM model svm_model <- svm(Species ~ ., data =
train_data, kernel = "radial")

# Print the summary of the model
summary(svm_model)

# Predict the test set predictions <- predict(svm_model,
newdata = test_data)

# Evaluate the model's performance
confusion_matrix <- table(Predicted = predictions, Actual = test_data$Species)
print(confusion_matrix)

# Calculate accuracy accuracy <- sum(diag(confusion_matrix)) /
sum(confusion_matrix) cat("Accuracy:", accuracy * 100, "%\n")
```



b) Decision tree in R

# Install and load the rpart package (if not already installed)
install.packages("rpart") library(rpart)

Load the iris dataset data(iris)

# Split the data into training (70%) and testing (30%) sets set.seed(123)
# For reproducibility
sample_indices <- sample(1:nrow(iris), 0.7 * nrow(iris)) train_data
<- iris[sample_indices,]
test_data <- iris[-sample_indices,]

Fit the Decision Tree model tree_model <- rpart(Species ~ ., data
= train_data, method = "class")

# Print the summary of the model
summary(tree_model)

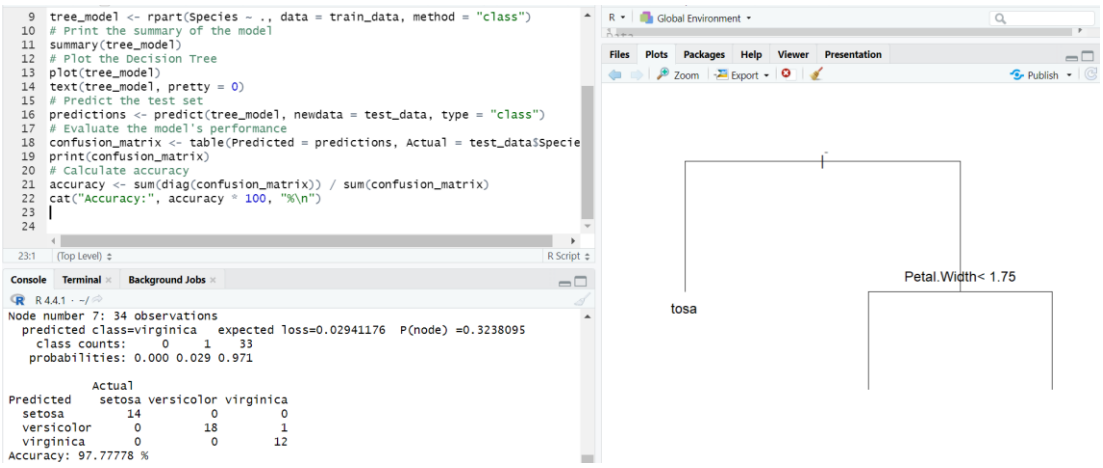
Plot the Decision Tree
plot(tree_model) text(tree_model,
pretty = 0)

Predict the test set predictions <- predict(tree_model, newdata =
test_data, type = "class")

Evaluate the model's performance

confusion_matrix <- table(Predicted = predictions, Actual = test_data$Species)
print(confusion_matrix)

# Calculate accuracy
accuracy <- sum(diag(confusion_matrix)) / sum(confusion_matrix) cat("Accuracy:",
accuracy * 100, "%\n")



Result: Thus SVM and Decision Tree techniques are implemented in RStudio using R language.